REMARKS

In the Office action dated May 26, 2005, the Examiner rejected claims 1, 2, 4 - 6, 9, 12, 14, & 16 pursuant to 35 U.S.C. §102(b) as anticipated by *Kraft*, U.S. # 2,946,488 and claims 1, 8, 11, & 13 as anticipated by *Roeser*, U.S. #4,921,133. The Examiner further rejected claims 3, 7, 17, 18, & 19 pursuant to 35 U.S.C. §103(a) as obvious in light of *Kraft* in view of *Liska*, U.S. #4,775,303, claims 10 & 20 as obvious in light of *Kraft* in view of *Roeser*, and claim 15 as obvious in light of *Kraft* in view of *Holley*, U.S. #3,730,105.

Applicant has amended all claims and cancelled claims 6 & 7 and believes the aforesaid together with the corresponding dependent claims comply with the requirements of 35 U.S.C. §102(b) & §103(a). Applicant respectfully traverses the Examiner's §102(b) and §103(a) rejections. Applicant further states that no new matter has been added to the present art Application.

Regarding the aforesaid §102(b) rejection of Applicant's amended claims 1, 2, 4 - 6, 9, 12, 14, & 16 including the corresponding dependent claims, *Kraft* describes an air pressurized electronic encapsulation system which is used for small volume applications. (Col. 1, Lines 18 - 19 and Col. 2, Lines 1 - 3) The feed pressure for the resins from the reservoirs **1** are supplied by the compressed air supply. That is, unlike Applicant's art, *Kraft* does not utilize any type of pump to suction and discharge the resin or hardener, but instead relies upon compressed air for viscous material feed. This is obviously dangerous due to the extreme pressures necessary to flow highly viscous epoxy materials.

The pressurized resin from *Kraft*'s reservoirs **1** are allowed to flow into a cavity **5** and expand a septum **8** which in turn pressurizes oil through said septum **8**. Said oil thereby pressurizes air within a reservoir **24** through a piston **12**. Each piston **12, 43** is connected to an arm **15** which is hinged **16** on a **left side only**. The pistons of *Kraft* do not suction feed the input to *Kraft*'s mixing head **11** (that is provided by compressed air), do not pump on both an extension and a reflex stroke but only on a compression stroke, and do not pump the resin or hardener directly as does Applicant's art. (i.e. they pump oil) Furthermore, *Kraft*'s arm **15** is not a hinged plate which is hinged in the middle between the sides or ends and driven on a side with a hydraulic actuator as in Applicant's art. The arm of *Kraft* could not provide an equal discharge volume from each piston **12, 43** without piston **43** being of larger diameter since it is hinged on the left. At best, the piston **12, 43** arrangement of *Kraft* is a metering system which provides small displacement pressure through a septum **8** or plenum only upon a compression stroke. The pistons/cylinders of *Kraft* never touch the resin and pump volume is limited and small since it is only a function of septum **8** displacement.

Kraft does not disclose cavities having a heat transferring liquid but only discloses, without illustration, a heating coil about the reservoir **1**. (Col. 2, Lines 7 - 12) This prior art heating coil on or around a tank or reservoir **1** creates hot spots which are above the self hardening temperature of the constituent epoxy parts. When this localized temperature is exceeded, the epoxy parts begin to harden prior to mixing which assuredly clogs the tank, pump, and metering head. In combination with Applicant's unique design, the cavities around Applicant's tanks assure that the heating coils

or elements will not provide a localized self hardening heating. *Kraft* is silent as to this issue.

Kraft also does not disclose any type of recirculation system. Recirculation as stated within the specification provides uniform suspension of embedded fibers, mixing, and temperature control. Optimum epoxy part control and final mix control is only achieved if the fibers stay uniformly mixed and the components stay at a high temperature below the self curing temperature. When the aforesaid is achieved, the resultant mix has the quickest cure and strongest bond. Again, *Kraft* is silent about recirculation or its benefits.

Even if the pistons of *Kraft* were allowed to directly pump the viscous material, they could not perform such a function on both a reflux and extension stroke since there are no spring loaded check valves within the piston/cylinder to positively close under the highly viscous loading of the viscous material. Furthermore, the apparatus of *Kraft* has a built in delay for the compressed air to move the viscous material into the cavity **5** when the valve **9** closes and force oil into the compressed air space **24** through the septum **8**. (viscous epoxy materials move very slowly under reasonably safe compressed air pressures) That is, the operator must wait for the highly viscous material to flow between charges when limit switch **19** is activated. Applicant's present art is continuous. Applicant's art pumps on both reflux and extension and is constantly pressurized by the hydraulic drive cylinder. There is no delay for recharge when using Applicant's art. This is only achieved with Applicant's unique use of spring loaded check valves within the unique pump utilized by Applicant which heretofore has not been found in viscous epoxy pumping applications.

The dispensing valve **32** of *Kraft* has an inherent reliability problem which Applicant's present art does not. (see Fig. 4 of *Kraft*) That is, the valve operates with mixed resin and hardener in the same space. If allowed to set, the valve **32** will not function as the epoxy has hardened and stopped movement of the valve. This is why prior art such as *Kraft* requires the use of a solvent flush, unlike Applicant's art. Applicant's art purposely keeps all hardeners and resins separated throughout, even at the dual pin valve stages, until each portion reaches a disposable and removable static mixer beyond the valve staging. *Kraft* places a single valve after a mixing portion which most surely will cause reliability issues.

Regarding the §102(b) rejection of Applicant's amended claims 1, 8, 11, 13 by *Roeser*, again no recirculation system, pump suction feed, liquid heat transfer tank bath, or reflex and extension pumping is disclosed. *Roeser* again discloses an electronic component encapsulation apparatus which by its very nature dispenses small quantities of epoxy for small electronic components, unlike Applicant's art. *Roeser* is mainly concerned with degassing the blend in order to avoid air voids within the potted component. The only feed to *Roeser*'s pumps is provided by his auger **86**. Although sufficient for small quantities at low pressure, an auger alone is insufficient in applications as described in Applicant's specification which require high volume at reasonably high fluid pressures.

The piston means of *Roeser* is not a true piston/cylinder pump arrangement as in Applicant's art. That is, *Roeser* specifically states that "the piston means is deliberately made with a diameter

dimension several thousandths of an inch smaller than the diameter of the cylinder surface **132**". (see Fig. 5 and Col. 11, Lines 15 - 46) *Roeser* specifically intends for the resin to flow around the piston **124** after the **non**-check valves **356, 358** are closed and out the first outlet means **66** and the second outlet means **68**. *Roeser* states that it helps in the cleaning process. *id.* With this arrangement, suction via said pumps is impossible since there is no seal between the piston **124** and cylinder **132**.

Roeser's heating of tank **135** is only provided via a plurality of cartridge heater elements **167** in the bottom wall as shown in Fig. 4. (Col. 14, Lines 17 - 50) Again and especially for epoxies, the prior art localized heating problems are an inherent problem with this design. That is, the resins and hardeners will at spots reach the self hardening temperature and cause clogging and buildup problems. Nowhere does *Roeser* disclose the benefits of a heat transfer liquid bath.

Also, the pumps of *Roeser* are directly driven by a ball screw **338** with no hinged plate and no means of controlling or adjusting the output of one pump relative to the other. (See Fig. 16A) For the very small volume applications of *Roeser* this may suffice, but the high volume applications described by Applicant, the volume and force requirements are not practically achieved with a compact ball screw arrangement.

The mixing means **70** of *Roeser* is also distinct from Applicant's art. (see Fig. 16B) *Roeser* mixes his constituent parts internal to a mixing head and then dispenses said mixture through a dispensing manifold **71**. This prior art technique requires the use of *Roeser*'s solvent **384** in order to clean all of the components following said mixer, otherwise the mixture will harden and render useless the components following the mixer. As described in Applicant's amended claims, the static mixer is the last component and performs mixing and dispensing within a removable element. This eliminates the requirement for solvent and allows easy replacement of the static mixer if hardening occurs.

Nowhere does *Roeser* disclose the use of "pin" type valves within his dispensing head or elsewhere. *Roeser* does however disclose "pinch" type valves as revealed by the Examiner at Col. 3, lines 37 - 44. It is well understood within the art that "pinch" valves and "pin" valves are distinct elements. The "pinch" valves **108** as described within *Roeser* are utilized commensurate with the understanding within the mechanical arts to control shut off of flow. (Col. 17, Lines 15 - 20) That is, a "pinch" valve is used to turn on or off and not for metering such as Applicant's valves. Nowhere does *Roeser* show or describe "pin" type valves as shown and described in Applicant's application.

Also as stated, no disclosure is made in *Roeser* to a recirculation system. Instead, *Roeser* places multiple heaters at various locations to maintain the constituent parts at an elevated temperature. That is, a cartridge heater **166, 167, 168**, is provided in the tank, a heater in the pump **346, 348**, and a heater **408** in the mixing head. Applicant's recirculation solves all of this prior art complexity by assuring placement of cooled components back into the heated tanks when dispensing is idle. Furthermore, *Roeser* would have difficulty utilizing a fiber reinforcement material in his

dispensing apparatus since the lack of recirculation will allow fibers to slowly settle out of the mixture.

Under 35 U.S.C. §102, anticipation requires that each and every element of the claimed invention be disclosed in the prior art. In addition, the prior art reference must be enabling, thus placing the allegedly disclosed matter in the possession of the public. *Akzo N.V. v. U.S. International Trade Commission*, 1 USPQ 2d 1241, 1245 (Fed. Cir. 1986), *cert. denied*, 482 U.S. 909 (1987). As aforesaid, *Roeser & Kraft* are silent about many of the claimed elements of Applicant's amended claims. Furthermore, when pumps, heating means, feed means, mixing heads, valves, etc. are disclosed in *Roeser* or *Kraft* they are described distinctly differently with different constituent parts and different function than Applicant's claimed art. Failure of *Roeser & Kraft* to place any one of the aforesaid does not satisfy the disclosure requirements of *Akzo N.V.*

Further relating to *Roeser & Kraft*, invalidity for anticipation requires that all of the elements and limitations of the claim are found within a single prior art reference. There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. *Scripps Clinic & Research Foundation v. Genentech Inc.*, 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991). The prior art references of *Roeser & Kraft* do not disclose the aforesaid unique features, function, or result of Applicant. The aforesaid is further reinforced in *Motorola, Inc. v. Interdigital Tech. Corp.*, 43 USPQ 2d 1481, 1490 (Fed. Cir. 1997) as stated, "for a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art." *Motorola, Inc.* further states, "although this disclosure requirement presupposes the knowledge of one skilled in the art of the claimed invention, that presumed knowledge does not grant a license to read into the prior art reference teachings that are not there." As aforesaid, each and every unique aforedescribed elements of Applicant is not found in *Roeser* or *Kraft* and even if a somewhat similar element is found, it is elementally distinct with distinct operation and function.

Regarding the aforesaid §103(a) rejection of Applicant's claims 3, 7, 17, 18, and 19 relative to *Kraft* in view of *Liska*, Applicant incorporates by reference the aforesaid distinctions stated with respect to the §102(b) rejections. *Liska* teaches a pump which discharges during reciprocatory movements of the piston in both directions. (Col. 1, Lines 15 - 30) *Liska* places a spring between packings of the pump and not on the ball check valve itself. (Col. 1, Lines 54 - 64) The spring **65** pressure of *Liska* is placed upon the packings to expand the packing rings **59** into sealing engagement with the piston **53**. (Col. 3, Lines 27 - 33) This technique assures a seal between the piston and cylinder but does nothing to assure check valve closure when utilizing highly viscous materials such as epoxies.

The ball check valves of *Liska* are not shown or described as spring loaded. Prior to Applicant's unique pump and spring loaded valve system, spring loading of the ball check valves in a pump such as *Liska*'s was unavailable commercially. This obviously forced Applicant to develop the art to function with the highly viscous material which Applicant pumps. With highly viscous materials, especially with embedded fibers, the ball check valves of *Liska* will not reliably

close. Obviously, if the art of Applicant's spring loaded check valves was obvious, it would have been available to Applicant when the present art was designed, thereby obviating the need for Applicant to redesign the valve system of such a pump. Applicant's unique application and function required a unique solution heretofore unavailable.

Regarding the aforesaid §103(a) rejection of Applicant's claims 10 & 20 relative to *Kraft* in view of *Roeser*, Applicant incorporates by reference the aforesaid distinctions stated with respect to the §102(b) rejections. Neither *Kraft* or *Roeser* disclose the pump suction apparatus or method of Applicant, nor do they individually or collectively disclose the other aforementioned elements of Applicant. As stated, *Kraft* and *Roeser* are designed for low volume applications which do not require or do not anticipate the recirculation, mixing, or temperature control features of Applicant's art.

Regarding the aforesaid §103(a) rejection of Applicant's claim 15 relative to *Kraft* in view of *Holley*, Applicant incorporates by reference the aforesaid distinctions stated with respect to the §102(b) rejections. The art of *Holley* relates to a convertible rail highway vehicle which is distinct from the art of Applicant. *Holley*'s rail guide wheels **2** and his axle plate **20** mounting are distinct from Applicants terrain drives mounted with Applicant's carriage and the one or more rail followers of Applicant. Applicant utilizes a terrain drive (callout #98 if Fig. 3) which allows movement apart from frictional contact with rails. *Holley* is silent regarding terrain drives.

None of the references cited including *Holley*, either individually or collectively, have all of the unique elements of Applicant's amended claims as presented herein, nor do they provide a motivation, suggestion, or teaching of the desirability of making the specific combination that was made by Applicant. Regarding the aforesaid §103(a) rejections, the Federal Circuit now uses the suggestion test to assess obviousness rejections. In the case of *In re Kotzab*, 55 USPQ2d 1313 (Fed Cir. 2000), the Federal Circuit stated that "to establish obviousness based on a combination of elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the **specific** combination that was made by the applicant." (the term "*specific*" is emphasized) The cited references do not provide a motivation, suggestion, or teaching of the desirability of providing the unique pumping, holding, heating, mixing, or dispensing combination of Applicant. The aforesaid is further reinforced in *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 56 USPQ 2d 1456, 1459 (Fed. Cir. 2000) citing *C.R. Bard, Inc. v. M3 Sys. Inc.*, 157 F.3d 1340, 1352, 48 USPQ 2d 1225, 1232 (Fed. Cir. 1998) which states as relating to obviousness, "the first requirement is that a showing of a suggestion, teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding."".

The aforesaid motivating suggestion must also be explicit. *Winner International Royalty Corp. v. Wang* 48 USPQ2d 1139, (D.C.D.C. 1998). The fact that prior art "may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 922 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992). Again, as aforesaid and without suggestion by the Examiner, *Kraft*, *Roeser*, *Liska*, or *Holley* do not provide a motivation, suggestion, or teaching of the desirability of Applicant's art as

described in his amended claims. That is, the aforesaid are bereft of suggestion on recirculation, liquid bath heating, mixing near discharge external to the valving, spring check valve continuous flow pumps, terrain drives, centrally hinged plates driven by a hydraulic cylinder and the other distinctive points stated.

Included herewith is the $510.00 fee for a three month delayed response reply.

In view of the foregoing, the independent claims along with their corresponding dependent claims are herewith submitted as patentable. Accordingly, favorable reconsideration and allowance of this application is requested.

PLEASE NOTE: For some reason this application has not been associated with my customer number 23,830. I have repeatedly requested that this association be made so that I may view the status with private PAIR, but it is still not in the private pair database. Any help would be appreciated.

Respectfully submitted,

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CERTIFICATE OF MAILING

I certify that the foregoing **AMENDMENT A** is being deposited with the United States Postal Service as EXPRESS MAIL #ED 216495260 US, postage prepaid, in an envelope addressed to: Commissioner of Patents, Mail Stop Fee Amendment, P.O. Box 1450, Alexandria, VA 22313-1450, on November 23, 2005.

Kevin L. Klug